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EXAMINER	
HELM, CARALYNNE E	

ART UNIT	PAPER NUMBER
1615	

NOTIFICATION DATE	DELIVERY MODE
03/15/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docket-ip@dewittross.com

Office Action Summary	Application No.	Applicant(s)	
	10/567,979	AI-LAMEE ET AL.	
	Examiner	Art Unit	
	CARALYNNE HELM	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20,22 and 23* is/are pending in the application.

4a) Of the above claim(s) *10-20 and 22-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

To summarize the current election, applicant elected Group I and the species where Formula I is poly(vinylbutyral-co-vinylalcohol-co-vinylacetate) with a Mw from 50,000 to 80,000, and 88% vinylbutyral groups and Formula II is poly(vinylpyrrolidone-co-vinylacetate) with an average Mw of 50,000. (It is noted that the restriction requirement did not require specification of the polymers' molecular weights). Groups I and IV were rejoined.

Claims 10-20 and 23 were withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-9 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ding (previously cited) in view of Hsu et al. (previously cited) and the Technical Information on Kollidon VA 64 reference (previously cited; henceforth the Kollidon VA 64 reference) as evidenced by Li et al. (previously cited).

Ding teaches a drug-containing poly(acetal) based coating for an implantable medical device, where stents are exemplified as envisioned devices (see abstract and column 5 lines 22-30). In particular, Ding teaches a terpolymer of vinyl butyral, vinyl alcohol and vinyl acetate (first compound) as the poly(acetal) in the coating composition (see claim 2, column 3 lines 21-27; instant claims 1 and 5). Variants of this polymer have the vinyl butyral constituting about 88% of the polymer backbone, with about 11%

vinyl alcohol and the balance vinyl acetate (see column 3 lines 52-54; instant claims 6 and 7). The molecular weight (M_w) of this polymer is taught to be between 40,000 and 250,000 (see column 3 lines 31-32; instant claim 7). "In the case where the claimed ranges 'overlap or lie inside ranges disclosed by the prior art' a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed.Cir. 1990)" (see MPEP 2144.05). Here the taught molecular weight range contains the claimed range of 50,000 to 80,000; therefore this claimed range is obvious in light of the range taught by Ding (see instant claim 7). Ding goes on to teach particularly envisioned drugs to include within the coating composition and these include both rapamycin and dexamethasone, as well as compounds that inhibit restenosis (see claims 2-3, column 5 lines 51-55, and column 6 lines 26-27 and 32; instant claim 8). An example demonstrates that Ding et al. contemplated the drug (bioactive material) to be present in the coating at about 1:2 drug to polymer (vehicle) (see example 5; instant claim 9). Further, Ding teaches that the poly(acetal) may be blended with other polymers where hyaluronic acid, a known lubricious agent, and vinyl acetate, are taught (see claim 10, column 4 lines 48-51, and column 5 lines 1-2 and 14 as well as Li et al. paragraph 8; instant claims 1 and 22). Ding does not specifically teach a copolymer of vinyl pyrrolidone and vinyl acetate as the "other" polymer.

Hsu et al. teach a coating composition for implantable medical devices that confers lubricity to the device surface (see abstract and column 1 lines 10-11). Hsu et al. go on to suggest the inclusion of a polyvinylpyrrolidone-vinyl acetate copolymer

(second compound) in the coating to enhance the lubricity to the coating (see column 3 lines 56-60 and column 9 lines 31-35; instant claim 1). A lubricity enhancing compound is exemplified in the coating composition at 0.4% and 0.5%, including solvent, or 43% and 49%, without solvent (see table 1 one step solution and example 3 solution B; instant claim 2).

The Kollidon VA 64 reference teaches a polyvinylpyrrolidone-vinyl acetate copolymer known for use in drug delivery and film forming applications (see page 1 section 1.1, page 7 section 3.1, and page 8 section 3.3). The polymer is taught to have 60% vinylpyrrolidone and 40% vinyl acetate (see page 4 section 1.2; instant claim 3). Further, the molecular weight (M_w) it taught to be between 45,000 and 70,000 (see page 6 section 2.10). The teaching of 45,000 is interpreted as equivalent to the claimed "about 50,000" (see instant claim 4).

Since the implantation of a stent would be facilitated by it having a lubricious outer surface (e.g. easier and faster implantation) and Ding contemplates lubricious polymers as "other" polymers in their coating composition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select a polyvinylpyrrolidone-vinyl acetate copolymer as a particular "other polymer" to use in the invention of Ding and employ it at the taught percentages (use of known technique to similar product to improve in the same way). In particular, the selection of the polyvinylpyrrolidone-vinyl acetate known as Kollidon VA 64 would have been an obvious choice for this artisan because it was available at the time of the invention, known for use in drug delivery and films, and the selection would be the simple substitution of one

known element for another with a predictable outcome. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a polyvinylpyrrolidone-vinyl acetate copolymer with a 60:40 ratio of vinylpyrrolidone to vinyl acetate and a molecular weight of about 50,000 in the drug containing coating of Ding in view of Hsu et al. (see instant claim 22). Applicants do not teach any additional structure or components in the a coating in order for it to be "configured to release bioactive material" when the device on which it is coated is implanted; therefore the coating of Ding in view of Hsu et al. and the Kollidon VA 64 reference as evidence by Li et al. which contain the claimed first compound, second compound and bioactive material, meets this limitation. Thus claims 1-9 and 22 are obvious over Ding in view of Hsu et al. and the Kollidon VA 64 reference as evidence by Li et al.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ding in view of Hsu et al. and the Technical Information on Kollidon VA 64 reference as evidence by Li et al. as applied to claims 1-9 and 22 above, and further in view of Sass (previously cited).

Ding in view of Hsu et al. and the Technical Information on Kollidon VA 64 reference as evidence by Li et al. make obvious a coating composition with poly(vinylburtyral-co-vinylalcohol-co-vinylacetate) with a M_w from about 50,000 to 80,000, and 88% vinylbutyral groups, poly(vinylpyrrolidone-co-vinylacetate) (PVP/VA) with an average M_w of about 50,000, and a bioactive agent that inhibits restenosis. This modified reference does not explicitly teach the inclusion of 17β-estradiol.

Sass teaches that 17β-estradiol is known to inhibit smooth muscle cell growth and is used to inhibit restenosis and in-stent stenosis (see column 2 lines 50-57; instant claim 8).

Since Ding teaches the inclusion of compounds that inhibit restenosis in the coating composition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ 17β-estradiol in the coating composition of Ding in view of Hsu et al. and the Technical Information on Kollidon VA 64 reference as evidenced by Li et al. as the simple substitution of one known element for another with a predictable outcome. Therefore claims 1-9 are obvious over Ding in view of Hsu et al., the Technical Information on Kollidon VA 64 reference, and Sass as evidence by Li et al.

Claims 1, 5-6, 9, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whitbourne et al. (previously cited) as evidenced by Dupont et al. (previously cited) and Dhaliwal et al. (previously cited).

Whitbourne et al. teach a coating for implantable medical devices that is composed of both polymers and a bioactive agent (see abstract). Specifically the coating is envisioned to contain a bioactive agent, stabilizing polymer, and hydrophilic polymer (see column 3 lines 50-52). The hydrophilic polymer is preferably PVP or PVP/VA (second compound) and the stabilizing polymer is preferably polyvinylbutyral (first compound), where BUTVAR® B-79 is an envisioned variety (see column 3 lines 21-26, 32, and 43-44 and column 5 line 66-column 6 line 1 and 25-26; instant claims 1

and 22). Dupont et al. teach that BUTVAR® B-79 is composed of 87 wt% vinyl butyral, 12 wt% vinyl alcohol and 1 wt% vinyl acetate (see column 7 lines 53-58; instant claims 5-6). Dhaliwal et al. teach that polyvinylbutyral is a random terpolymer of vinyl butyral, vinyl alcohol and vinyl acetate (see page 245 column 2 paragraph 2-246 column 1 line 9; instant claim 1). Example 19 of Whitbourne et al. teaches a ratio of 2:9 bioactive agent to total stabilizing polymer and hydrophilic polymer (see instant claims 9).

Although Whitbourne et al. do not provide an example that combines their envisioned polyvinylbutyral and PVP/VA with a bioactive agent, it would have been obvious to one of ordinary skill in the art at the time of the invention to follow their teachings and combine the preferred stabilizing polymer and hydrophilic polymer along with a bioactive agent to prepare their coating for its touted flexibility and adhesion to the device substrate. It additionally would have been obvious to follow the suggestion of their example and include the bioactive agent at a ratio of 2:9 relative to the total stabilizing polymer and hydrophilic polymer. Applicants do not teach any additional structure or components in the a coating in order for it to be "configured to release bioactive material" when the device on which it is coated is implanted; therefore the coating of Whitbourne et al. as evidenced by Dupont et al. and Dhaliwal et al. which contain the claimed first compound, second compound and bioactive material, meets this limitation since this ratio was explicitly taught for the bioactive agent containing coating. Therefore claims 1, 5-6, 9, and 22 are obvious over Whitbourne et al. as evidenced by Dupont et al. and Dhaliwal et al.

Response to Arguments

Applicants' arguments, filed January 5, 2011, have been fully considered but they are not deemed to be persuasive.

Regarding the restriction requirement:

Applicants argue that since the language of 37 CFR 1.475(b) requires that a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn to on of the following combinations of categories...(2) a product and process of use of said product, claim 23 should be examined. 37 CFR 1.475(a) states that "an international and a national stage application shall relate to one invention *only* or to a group of inventions so linked as to form a single general inventive concept ('requirement of unity of invention'). Where a group of inventions is claimed in an application, the requirement of unity of invention shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression 'special technical features' shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art [emphasis added]." The Office action mailed October 5, 2010 detailed the lack of a special technical feature between the elected invention and that presented in claim 23. Since the invention of claim 23 and Group I do not have a technical feature that makes a contribution over the prior art they lack unity and are properly restricted from one another. The restriction requirement is maintained and claim 23 remains

withdrawn from consideration. Upon reply to this Office action, the status of claim 23 should be changed accordingly.

Regarding the rejection under 35 USC 103(a) over Ding in view of Technical Information on Kollidon VA 64 reference, Sass and/or Hsu et al.:

Applicants argue that the coating taught by Hsu et al. is not designed to release a drug and that the combination of their teachings with those of Ding is improper. Both Ding and Hsu et al. teach coatings for implanted medical devices. This commonality makes the references analogous art and suitable for combination. Applicants further argue that Hsu et al. do not suggest adding PVP copolymers to adjust the release profile of a drug present in a coating and that the application of the teachings of Hsu et al. to Ding destroys the functionality of the coating of Hsu et al. This argument assumes that the entirety of the teachings of Hsu et al. are literally inserted into those of Ding. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Additionally, MPEP 2144 III states that "[t]he reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. See,

e.g., In re Kahn, 441 F.3d 977, 987, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006)." Hsu et al. teaches the inclusion of PVP-VA as a particular hydrophilic copolymer for the purpose of conferring lubricity to a stent coating. The incorporation of this teaching into the stent coating of Ding is not destructive to the teachings of Hsu et al. because the PVP-VA is utilized for the same purpose Hsu et al. envisions. In addition, the rejection does not suggest modifying the invention of Hsu et al. but instead modifies that of Ding. Since the rejection does not suggest any changes to the invention of Hsu et al. it most certainly does not destroy its functionality

Applicants further argue that the teachings of the Technical Information on Kollidon VA 64 reference are irrelevant and contrary to the teachings of Hsu et al. The teachings of Hsu et al. motivate the inclusion PVP-VA in a stent coating for added lubricity in the coating of Ding. Technical Information on Kollidon VA 64 reference teaches particular PVP-VA polymers that were known at the time of the invention for their utility in generating coatings in general and for drug delivery matrices. These teachings are not at all destructive to those of Hsu et al. because they already envision PVP-VA polymers in their coating and the Technical Information on Kollidon VA 64 reference details a particular variety that was known for producing coatings. Moreover, the utility of Kollidon VA 64 as both a coating and a drug delivery matrix were both pertinent teachings to those of Ding. Therefore the teachings of the Technical Information on Kollidon VA 64 reference are relevant to Ding in view of Hsu et al.

Additionally, applicants argue that Sass is irrelevant to the teachings of Ding in view of Hsu et al. However, Ding envisions anti-restenosis drugs for its coating and

Sass teaches a particular variety that was known to be effective. For this reason the teachings of Sass are pertinent to those of Ding in view of Hsu et al.

Regarding the rejection under 35 USC 103(a) over Whitbourne et al. in view of DuPont et al. and Dhaliwal et al.

Applicants argue that there was no motivation provided by Whitbourne et al. to combine their BUTVAR polymer and PVP-VA. It is not required that the cited references supply an explicit motivation to combine the components that they teach. Nevertheless, Whitbourne et al. teach a coating with a bioactive agent, stabilizing polymer, and hydrophilic polymer. They then teach a short listing of preferred stabilizing polymers which include the BUTVAR polymer and short listing of preferred hydrophilic polymers which include PVP-VA. As a result of this explicitly stated preference, the artisan of ordinary skill would have been motivated to prepare the coating of Whitbourne et al. with the preferred components and that include the combination of BUTVAR polymer and PVP-VA.

In addition, applicants argue that the limitation "configured to release the bioactive material when an implantable medical device onto which the coating is deposited is implanted" is a structural limitation worthy of patentable weight. This recitation was considered in the rejection and given the patentable weight that it demands. The disclosure does not link any structure the recitation and its presence is not sufficient to overcome the rejection. In addition, since the coating of Ding and that of

Whitbourne et al. are both taught to release drugs that address restenosis *in vivo*, they are configured to release bioactive material when implanted and meet this limitation.

Conclusion

No claim is allowed.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARALYNNE HELM whose telephone number is (571)270-3506. The examiner can normally be reached on Monday through Friday 9-5 (EDT).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert A. Wax can be reached on 571-272-0623. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Caralynne Helm/
Examiner, Art Unit 1615

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